We claim:

1. A reflector for reflecting a broad bandwidth of electromagnetic (EM) radiation, comprising:

a sheet comprising a large plurality of pairs of layers of transparent polymer material parallel to a surface of the sheet, each pair of layers having a difference in the index of refraction between the materials in each layer of the pair, the total thickness of each pair of layers in the large plurality of layers varying substantially continuously and non linearly across the thickness of the sheet.

2. The reflector of claim 1, where the broad bandwidth of the electromagnetic spectrum is in the infrared portion of the electromagnetic spectrum.

3. The reflector of claim 2, further comprising:

an electro-optical glazing structure having reflection and transmission modes of operation for selectively reflecting and transmitting electromagnetic radiation, respectively, the electro-optical glazing structure comprising:

an electro-optical glazing panel having first and second optical states of operation;

optical state switching means for switching the electro-optical panel to the first optical state of operation in order to induce the electro-optical glazing structure into the reflection mode of operation, and for switching the electro-optical panel to the second optical state of operation in order to induce the electro-optical glazing structure into the transmission mode of operation.

4. The electro-optical glazing structure of claim 3, further comprising a controllable scattering layer.

5. The electro-optical glazing structure of claim 3, wherein the controllable scattering layer comprises a fluid medium containing a large plurality of anisotropically shaped objects for controllably scattering light, the orientation of anisotropically shaped objects controllable by a field.

6. The electro-optical glazing structure of claim 3, wherein the controllable scattering layer comprises a polymer medium containing a large plurality of inclusions, each inclusion containing liquid crystal material, the liquid crystal material controllable by a field.

7. The electro-optical glazing structure of claim 3, wherein the controllable scattering layer comprises a mixture of a polymer medium and a liquid crystal material, the liquid crystal material controllable by a field.

8. The reflector of claim 1, where the broad bandwidth of the electromagnetic spectrum is in the visible portion of the electromagnetic spectrum.

9. The reflector of claim 1, where the broad bandwidth of the electromagnetic spectrum is in the ultraviolet portion of the electromagnetic spectrum.

10. The reflector of claim 1, wherein a large plurality of the sheets are suspended in a transparent medium, the sheets being of micron size.

11. The reflector of claim 10, wherein the transparent medium is a fluid medium.

12. The reflector of claim 11, wherein the orientation of the sheets may be controlled by field, whereby the plurality of sheets may transmit the EM radiation.

13. The reflector of claim 12, wherein the orientation of the sheets may be controlled by field, whereby the plurality of sheets may scatter the EM radiation.

14. The reflector of claim 12, wherein the orientation of the sheets may be controlled by field, whereby the plurality of sheets may reflect the EM radiation in a coherent manner.

15. An electro-optical glazing structure having reflection and transmission modes of operation for selectively reflecting and transmitting a broad band of electromagnetic radiation, respectively, the electromagnetic radiation having a first and a second linear polarization, the electro-optical glazing structure comprising:

an electro-optical glazing panel having first and second optical states of operation; and

optical state switching means for switching the electro-optical panel to the first optical state of operation in order to induce the electro-optical glazing structure into the reflection mode of operation, and for switching the electro-optical panel to the second optical state of operation in order to induce the electro-optical glazing structure into the transmission mode of operation,

wherein the electro-optical panel comprises:

a sheet having a large plurality of pairs of layers parallel to a surface of the sheet, each pair of layers having a difference between the transparent polymer materials in each layer of the pair, the difference being in the index of refraction for electromagnetic radiation having the first linear polarization, wherein there is little difference in the index of refraction for electromagnetic radiation having the second linear polarization, the total thickness of each pair of layers in the large plurality of layers varying non linearly across the sheet.

16. The electro-optical glazing structure of claim 15, wherein the electro-optical panel further reflects circularly polarized electromagnetic radiation.

17. The electro-optical glazing structure of claim 16, wherein the electro-optical panel further comprises a cholesteric liquid crystal (CLC) material.

18. The electro-optical glazing structure of claim 15, wherein the electro-optical panel selectively transmits and reflects electromagnetic radiation of a first bandwidth of the EM spectrum, further comprising a reflector of EM radiation which reflects radiation in a second bandwidth of the EM spectrum, the reflector of EM radiation which reflects radiation in a second bandwidth comprising a sheet having a large plurality of pairs of layers parallel to a surface of the sheet, each pair of layers having a difference in the index of refraction between the materials in each layer of the pair.

19. The electro-optical glazing structure of claim 18, wherein the reflector of EM radiation which reflects radiation in a second bandwidth has total thickness of each pair of layers in the large plurality of layers varying non linearly across the sheet.

20. The electro-optical glazing structure of claim 15, further comprising a controllable scattering layer.

21. The electro-optical glazing structure of claim 20, wherein the controllable scattering layer comprises a fluid medium containing a large plurality of anisotropically shaped objects for controllably scattering light, the orientation of anisotropically shaped objects controllable by a field.

22. The electro-optical glazing structure of claim 20, wherein the controllable scattering layer comprises a polymer medium containing a large plurality of inclusions, each inclusion containing liquid crystal material, the liquid crystal material controllable by a field.

23. The electro-optical glazing structure of claim 20, wherein the controllable scattering layer comprises a mixture of a polymer medium and a liquid crystal material, the liquid crystal material controllable by a field.

24. The electro-optical glazing structure of claim 15, wherein the electro-optical panel selectively transmits and reflects electromagnetic radiation of a first bandwidth of the EM spectrum, further comprising a reflector of EM radiation which reflects radiation in a second bandwidth of the EM spectrum, the reflector of EM radiation which reflects radiation in a second bandwidth comprising CLC layers of different handedness.

25. The electro-optical glazing structure of claim 24, the CLC layers have a non linear pitch distribution.

26. The electro-optical glazing structure of claim 3, further comprising a controllable absorbing layer.

27. The electro-optical glazing structure of claim 1, wherein the means for further controlling the electromagnetic radiation comprises an absorbing layer for controllably absorbing light.

28. The electro-optical glazing structure of claim 27, wherein absorbing layer is an electrochromic absorbing layer.